

Notice of Allowability

Application No.

10/614,182

Applicant(s)

KIM ET AL.

Examiner

Alexander G. Ghya

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to ____.2. ☒ The allowed claim(s) is/are 1 and 3-11.ALEXANDER GHYKA
PRIMARY EXAMINER3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).a) ☐ All b) ☐ Some* c) ☐ None of the:1. ☐ Certified copies of the priority documents have been received.2. ☐ Certified copies of the priority documents have been received in Application No. ____.3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.**Attachment(s)**1. ☒ Notice of References Cited (PTO-892)2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date ____4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material5. ☐ Notice of Informal Patent Application (PTO-152)6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____7. ☒ Examiner's Amendment/Comment8. ☒ Examiner's Statement of Reasons for Allowance9. ☐ Other ____.

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Yoon S. Ham on September 21, 2005.

The application has been amended as follows:

In Claim 1, line 3, after "substrate", delete "in" , and insert – on --.

In Claim 1, line 3, between "film" and "formed" , insert – is --.

In Claim 1, line 3, after "using", insert – an--.

In Claim 1, line 9, after "d)", delete "pattering" and insert – patterning--.

In Claims 5, 6, 10 and 11, add a period ".", at the end of each claim.

In Claim 7, line 2, delete "as a photoresist".

Allowable Subject Matter

Claims 1 and 3-11 are allowed.

The following is an examiner's statement of reasons for allowance: The closest art known to the Examiner are cited on the PTO 892 and IDS forms of record. None of

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the references anticipate or make obvious providing a semiconductor substrate on which a lower film is formed using an organic anti-reflection coating of amorphous carbon series or an inorganic anti-reflection coating; patterning a second photoresist film and a first photoresist film, wherein the second photoresist film has a higher glass transition temperature, by an exposure process and a wet development process so that a contact hole is formed; implementing RFP to cause the first and second photoresist film pattern to flow so that the first contact hole changes to a second contact hole having a critical dimension lower than a critical dimension of the first contact hole; and implementing an etch process using the second photoresist pattern as an etch mask for the lower film to pattern the lower film, as required by the presently claimed invention.

Therefore, the present Claims are allowable over the cited prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Thursday during general business hours.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AGG
September 26, 2005

ALEXANDER GHYKA
PRIMARY EXAMINER

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